

AMENDMENTS TO THE CLAIMS

Please amend claim 1, such that the status of the claims is as follows:

1.(Currently Amended) A method for making a three-dimensional object comprising the steps of:

building an object from a polymeric or wax modeling material using a layered manufacturing rapid prototyping technique, wherein the built object has an object surface formed of the modeling material, and wherein at least a portion of the object surface has a surface effect due to the layered manufacturing rapid prototyping technique;

exposing the object to vapors of a solvent that transiently softens the modeling material at the object surface; and

reflowing the softened modeling material to smooth the surface effect of the object surface.

2.(Previously Presented) The method of claim 1, wherein the layered manufacturing technique comprises fused deposition modeling.

3.(Previously Presented) The method of claim 1, where the modeling material comprises a thermoplastic resin.

4.(Original) The method of claim 3, wherein the thermoplastic resin comprises at least about 50 weight percent of an amorphous thermoplastic selected from the group consisting of ABS, polycarbonate, polyphenylsulfone, polysulfone, polystyrene, polyphenylene ether, amorphous polyamides, acrylics, poly(2-ethyl-2-oxazoline), and blends thereof.

5.(Original) The method of claim 4, wherein the solvent is selected from the group consisting of methylene chloride, an n-Propyl bromide solution, perchloroethylene, trichloroethylene, and a hydrofluorocarbon fluid.

6-7.(Canceled)

8.(Previously Presented) The method of claim 1, and further comprising the step of:
selecting a length of time during which the object is to be exposed to the
solvent vapors as a function of concentration of the solvent vapors,
prior to the exposing step.

9.(Canceled)

10.(Previously Presented) The method of claim 1, and further comprising the step of:
masking selected portions of the object surface with a substance that will
inhibit smoothing of the selected portions, prior to the step of exposing
the object to the vapors of the solvent.

11.(Previously Presented) The method of claim 10, wherein the masking substance is applied
using an automatic process selected from the group consisting of a jetting process and a fused
deposition modeling process.

12-15.(Canceled)

16.(Original) The method of claim 11, and further comprising the step of:
identifying the selected portions of the object surface using a software
algorithm that creates a digital representation of the surface area to be
protected.

17.(Canceled)

18.(Original) The method of claim 1, and further comprising the step of:
creating a digital mask of selected portions of the object surface for which
smoothing is not desired, using a haptic input interface.

19.(Previously Presented) The method of claim 1, wherein the building step comprises pre-distorting certain object features so that said features will obtain a desired geometry following the exposing step.

20.(Previously Presented) The method of claim 19, and further comprising the steps of:
providing an initial object representation in a digital format, the initial object representation having a surface geometry; and
modifying the initial object representation to pre-distort certain features of the surface geometry, producing a modified object representation;
wherein the object built in the building step has a geometry defined according to the modified object representation; and
wherein the desired geometry attained following the exposing step approximately matches that of the initial object representation.

21.(Previously Presented) A method for making a three-dimensional object comprising the steps of:

forming a plurality of layers with a modeling material using a layered manufacturing rapid prototyping technique to build an object having an object surface, wherein the plurality of layers create a surface effect at the object surface, the surface effect being selected from the group consisting of a stair step effect, a roughness, and a combination thereof;
exposing the object to vapors of a solvent that transiently softens the modeling material at the object surface; and
reflowing the softened modeling material to reduce the surface effect at the object surface.

22.(Previously Presented) The method of claim 21, where the modeling material comprises a thermoplastic resin.

23.(Original) The method of claim 22, wherein the thermoplastic resin comprises at least about 50 weight percent of an amorphous thermoplastic selected from the group consisting of ABS, polycarbonate, polyphenylsulfone, polysulfone, polystyrene, polyphenylene ether, amorphous polyamide, methyl methacrylate, poly(2-ethyl-2-oxazoline), and blends thereof.

24-26.(Canceled)

27.(Original) The method of claim 21, and further comprising the step of:
masking selected portions of the object surface with a substance that will
inhibit smoothing of the selected portions, prior to the step of
reflowing the surface.

28.(Previously Presented) The method of claim 27, wherein the masking substance is applied using an automatic process selected from the group consisting of a jetting process and a fused deposition modeling process.

29-32.(Canceled)

33.(Original) The method of claim 28, and further comprising the step of:
identifying the selected portions of the object surface using a software
algorithm that creates a digital representation of the surface area to be
protected.

34-35.(Canceled)

36.(Original) A method for making a three-dimensional object comprising the steps of:
providing an initial object representation in a digital format, the initial object
representation having a surface geometry;
modifying the initial object representation to pre-distort certain features of the
surface geometry, producing a modified object representation;

building an object as defined by the modified object representation, from a modeling material using a layered manufacturing technique; and vapor smoothing surfaces of the object to produce a finished object, the finished object having a surface geometry that approximately matches that of the initial object representation.

37.(Original) The method of claim 36, and further comprising the step of:
identifying features of the surface geometry for pre-distortion according to their radii of curvature.

38.(Previously Added) The method of claim 36, wherein the layered manufacturing technique comprises fused deposition modeling.

39.(Previously Added) The method of claim 36, where the modeling material comprises a thermoplastic resin.

40.(Previously Added) The method of claim 39, wherein the thermoplastic resin comprises at least about 50 weight percent of an amorphous thermoplastic selected from the group consisting of ABS, polycarbonate, polyphenylsulfone, polysulfone, polystyrene, polyphenylene ether, amorphous polyamides, acrylics, poly(2-ethyl-2-oxazoline), and blends thereof.

41.(Previously Added) The method of claim 36, wherein the vapor smoothing is performed with a solvent selected from the group consisting of methylene chloride, an n-Propyl bromide solution, perchloroethylene, trichloroethylene, and a hydrofluorocarbon fluid.

42.(Previously Added) The method of claim 1, and further comprising the step of:
masking selected portions of the object surfaces with a substance that will inhibit smoothing of the selected portions, prior to the vapor smoothing step.